

REVISED EXHIBIT "B"

SCHEDULE SHOWING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS
IN ALL LAND IN THE NORTHEAST HOGBACK UNIT AGREEMENT,
SAN JUAN COUNTY, NEW MEXICO
EFFECTIVE JULY 1, 1960

ACT NO.	DESCRIPTION	NO. OF ACRES	SERIAL NO. AND DATE OF LEASE	LAND OWNERS AND PERCENTAGE OF ROYALTY	RECORD OWNER OF LEASE OR APPLICATION	NAME OF OWNER AND PERCENTAGE OF OVERRIDING ROYALTY	WORKING INTEREST OWNER AND PERCENTAGE
1	T-30N, R-16W Sec. 24: S/2 NE/4, SE/4 Sec. 25: E/2	560.00	NM-0269 10-1-51	USA 12 $\frac{1}{2}$ % (ALL)	Pan American Petroleum Corporation	Jean S. Brady and Stuart F. Brady, her husband..... 1% Edna Ione Hall and Ora R. Hall, Jr., her husband..... 4%	Pan American ALL
2	T-30N, R-16W Sec. 27: NW/4	160.00	NM-01049 12-1-51	USA 12 $\frac{1}{2}$ % (ALL)	Pan American Petroleum Corporation	H. O. Pool and Thelma K. Pool, his wife, Production payment of \$1,000.00 per acre payable out of 1/16 of 7/8	Pan American ALL
3	T-30N, R-16W Sec. 26: ALL Sec. 27: E/2, SW/4 Sec. 34: ALL Sec. 35: NE/4, NE/4, W/2 NE/4, NW/4, N/2 SW/4, SW/4	2160.00	NM-01049-A 12-1-51	USA 12 $\frac{1}{2}$ % (ALL)	Pan American Petroleum Corporation	H. O. Pool and Thelma K. Pool, his wife..... 5%	Pan American ALL
4	T-30N, R-16W Sec. 33: Lots 1, 2, E/2 NW/4, NE/4	278.70	NM-03331 5-1-52	USA 12 $\frac{1}{2}$ % (ALL)	R. W. Bolack	None	R. W. Bolack ALL

TRACT NO.	DESCRIPTION	NO. OF ACRES	SERIAL NO. AND DATE OF LEASE	LAND OWNERS AND PERCENTAGE OF ROYALTY	RECORD OWNER OF LEASE OR APPL-CATION	NAME OF OWNER AND PERCENTAGE OF OVERRIDING ROYALTY	WORKING INTEREST OWNER AND PERCENTAGE
5	<u>T-30N, R-16W</u> Sec. 33: Lots 3, 4, 5, 6, 7, NE 1/4 SW 1/4, N/2 SE 1/4	277.60	NM-03331-A 5-1-52	USA 12 1/2% (All)	Petro-Atlas, Inc.	None	Petro-Atlas, Inc. All
6	<u>T-30N, R-16W</u> Sec. 14: NW 1/4	160.00	NM-04407 7-1-52	USA 12 1/2% (All)	Pan American Petroleum Corporation	Joseph W. Aidlin and Mary Aidlin, his wife..... 5%	Pan American All
7	<u>T-30N, R-16W</u> Sec. 14: S/2 Sec. 24: W/2	640.00	NM-04407-A 7-1-52	USA 12 1/2% (All)	Pan American Petroleum Corporation	Joseph W. Aidlin and Mary Aidlin, his wife..... 4%	Pan American All
8	<u>T-30N, R-16W</u> Sec. 28: Lots 2, 7, 10, 15	162.00	NM-04419 7-1-52	USA 12 1/2% (All)	Pan American Petroleum Corporation	Joseph W. Aidlin and Mary Aidlin, his wife..... 5%	Pan American All
9	<u>T-30N, R-16W</u> Sec. 22: E/2	320.00	NM-04419-A 7-1-52	USA 12 1/2% (All)	Pan American Petroleum Corporation	Joseph W. Aidlin and Mary Aidlin, his wife..... 4%	Pan American All
10	<u>T-30N, R-16W</u> Sec. 28: Lots 1, 8, 9, 16	161.96	NM-04419-B 7-1-52	USA 12 1/2% (All)	Pan American Petroleum Corporation	Joseph W. Aidlin and Mary Aidlin, his wife..... 5%	Pan American All

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11	T-30N, R-16W Sec. 15: Lots 1, 2, 3, 4 E/2 W/2, W/2 E/2, NE/4 SE/4 Sec. 22: NW/4	674.16	NW-04443 1-1-52	USA 12 $\frac{1}{2}$ % (All)	Pan American Petroleum Corporation	Dorothy Ann Davis..... 1/5 of 1 $\frac{1}{4}$ % Marion Helen Fencil..... 1/2 of 1% D. J. Hoover..... 1/2 of 1% E. J. Hoover..... 1/2 of 1% F. W. Hoover..... 1/2 of 1% F. W. Hoover & E. J. Hoover, Ancillary Administrators of Estate of Edna J. Hoover..... 1/2 of 1% Andreas Jansen..... 1/2 of 1% Richard Jansen... 1/10 of 1 $\frac{1}{4}$ % Virginia Jansen.. 1/10 of 1 $\frac{1}{4}$ % Alice Augusta Pettit..... 1/10 of 1 $\frac{1}{4}$ % Blain Pettit..... 1/10 of 1 $\frac{1}{4}$ % Anna J. Voss..... 5/8 of 1% Wm. R. Voss..... 5/8 of 1%	Pan American ALL
12	T-30N, R-16W Sec. 28: Lots 3, 4, 5, 6, 11, 12, 13, 14	235.18	NW-04443-A 1-1-52	USA 12 $\frac{1}{2}$ % (All)	John N. Eddy.... 1/2 Charles B. Gonsales..... 1/2	Edna J. Hoover, Executrix of Estate of O. J. Hoover, Deceased..... 2 $\frac{1}{2}$ % Anna J. Voss, Sole Devisee, of Henry Voss, Deceased..... 5/8 of 1% William R. Voss.... 5/8 of 1%	John N. Eddy..... 50% Charles B. Gonsales..... 50%

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13	T-30N, R-16W Sec. 23: All Sec. 24: N/2 NE/4 Sec. 25: W/2	1040.00	NM-0443-B 1-1-52	USA 12 $\frac{3}{8}$ % (All)	Pan American Petroleum Corporation	Dorothy Ann Davis, 1/5 of 1 $\frac{1}{8}$ % Marion Helen Fencil, 1/2 of 1% D. J. Hoover, 1/2 of 1% E. J. Hoover, 1/2 of 1% F. W. Hoover, 1/2 of 1% F. W. Hoover and E. J. Hoover, Ancillary Administrators of the Estate of Edna J. Hoover, 1/2 of 1% Andreas Jansen, 1/2 of 1% Richard Jansen, 1/10 of 1% Virginia Jansen, 1/10 of 1% Alice Augusta Pettit, 1/10 of 1% Blain Pettit, 1/10 of 1% Anna J. Voss, 5/8 of 1% Wm. R. Voss, 5/8 of 1%	Pan American All

TRACT NO.	DESCRIPTION	NO. OF ACRES	SERIAL NO. AND DATE OF LEASE	LAND OWNERS AND PERCENTAGE OF ROYALTY	RECORD OWNER OF LEASE OR APPLICATION	NAME OF OWNER AND PERCENTAGE OF OVERLIDING ROYALTY	WORKING INTEREST OWNER AND PERCENTAGE
14	T-3CN, R-16W Sec. 15: SE 1/4 SE 1/4 Sec. 22: SW 1/4	200.00	NW-04443-C 1-1-52	USA 12 1/2% (All)	Pan American Petroleum Corporation	Dorothy Ann Davis.. 1/5 of 1 1/4% Marion Helen Fencil. 1/2 of 1% D. J. Hoover..... 1/2 of 1% E. J. Hoover..... 1/2 of 1% F. W. Hoover..... 1/2 of 1% F. W. Hoover and E. J. Hoover, Ancillary Administrators of the Estate of Edna J. Hoover..... 1/2 of 1% Andreas Jansen..... 1/2 of 1% Richard Jansen.... 1/10 of 1 1/4% Virginia Jansen... 1/10 of 1 1/4% Alice Augusta Pettit..... 1/10 of 1 1/4% Blain Pettit..... 1/10 of 1 1/4% Anna J. Voss..... 5/8 of 1% Wm. R. Voss..... 5/8 of 1%	Pan American
15	T-3CN, R-16W Sec. 14: W 1/2 NE 1/4	80.00	NW-04444 4-1-52	USA 12 1/2% (All)	J. R. Abraham	R. P. Mohrbacker and Cavita D. Mohrbacker..... 3%	J. R. Abraham All
16	T-3CN, R-16W Sec. 13: S 1/2 SW 1/4	80.00	NW-05859 8-1-51	USA 12 1/2% (All)	Pan American Petroleum Corporation	R. P. Mohrbacker and Cavita D. Mohrbacker, his wife, as joint tenants..... 1% Berry Merritt and wife, Jean Merritt, as joint tenants..... 1% L. W. Swarts and Hazel Swarts, his wife..... 1%	Pan American All

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17	<u>T-30N, R-16W</u> Sec. 15: E/2 NE/4	80.00	NW-06686 3-1-55	USA 12 $\frac{1}{2}$ % (All)	Pan American Petroleum Corporation	J. V. Fritts and Ruth C. Fritts, his wife..... 5%	Pan American All
18	<u>T-30N, R-16W</u> Sec. 12: N/2, N/2 S/2	480.00	SF-081298 10-1-51	USA 12 $\frac{1}{2}$ % (All)	El Paso Natural Gas Products Company	Darrell C. Williams..... 4%	Colorado Oil & Gas Corporation... 50% El Paso Natural Gas Products Company..... 50%
19	<u>T-30N, R-16W</u> Sec. 13: S/2 NE/4, N/2 SE/4	160.00	SF-081298-A 10-1-51	USA 12 $\frac{1}{2}$ % (All)	Pan American Petroleum Corporation	J. Felix Hickman..... 2 $\frac{1}{2}$ % Helbing and Fodpechan... 2 $\frac{1}{2}$ %	Pan American All
20	<u>T-30N, R-16W</u> Sec. 11: E/2 Sec. 12: S/2 S/2	480.00	SF-081299 10-1-51	USA 12 $\frac{1}{2}$ % (All)	El Paso Natural Gas Products Company	Joe V. Lommori and Darrell C. Williams..... 4%	Colorado Oil & Gas Corporation... 50% El Paso Natural Gas Products Company..... 50%
21-A	<u>T-30N, R-16W</u> Sec. 13: SW/4 SE/4 SE/4 SE/4	480.00	SF-081299-A 10-1-51	USA 12 $\frac{1}{2}$ % (All)	Pan American Petroleum Corporation	Joe J. Lommori..... 1 $\frac{1}{4}$ % Thelma Bachechl..... 1 $\frac{1}{4}$ % Horace F. McKay, Jr..... 2 $\frac{1}{2}$ %	Pan American All
21-B	<u>T-30N, R-16W</u> Sec. 13: SW/4 NW/4 SE/4 NW/4 N/2 SW/4		SF-081299-A 10-1-51	USA 12 $\frac{1}{2}$ % (All)	Pan American Petroleum Corporation	Joe J. Lommori..... 1-3/4% Thelma Bachechl..... 1 $\frac{1}{4}$ % Darrell C. Williams and Elizabeth M. Williams..... 2%	Pan American All

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21-C	T-30N, R-16W Sec. 13: NW/4 NW/4 NE/4 NW/4 Sec. 14: E/2 NE/4		SF-081299-A 10-1-51	USA 12 $\frac{1}{2}$ % (All)	Pan American Petroleum Corporation	Joe J. Lommori..... 1 $\frac{1}{2}$ % Thelma Bachechi..... 1% Darrell C. Williams and Elizabeth M. Williams. 2% Dino Lommori..... 1% John W. Shirley and Norma Shirley..... 1%	Pan American All

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22	T-30N, R-16W Sec. 16: NW ¹ / ₄ SE ¹ / ₄ Sec. 36: SE ¹ / ₄ NE ¹ / ₄	80.00	E-3150-1 12-10-49	State of New Mexico 12 ¹ / ₂ % (All)	El Paso Natural Gas Company	John Burroughs..... 5%	El Paso Natural Gas Company All
23	T-30N, R-16W Sec. 36: NE ¹ / ₄ , NE ¹ / ₄ SW ¹ / ₄ NE ¹ / ₄	240.00	E-8343 7-20-54	State of New Mexico 12 ¹ / ₂ % (All)	Pubco Petroleum Corporation	None	Pubco Petroleum Corporation All
24	T-30N, R-16W Sec. 36: NE ¹ / ₄ NE ¹ / ₄	40.00	B-10, 05-45 6-24-43	State of New Mexico 12 ¹ / ₂ % (All)	Brookhaven Oil Company	None	Brookhaven Oil Company All
25	T-30N, R-16W Sec. 16: E ¹ / ₂ SW ¹ / ₄ , S ¹ / ₂ SE ¹ / ₄ , NE ¹ / ₄ SE ¹ / ₄	200.00	E-9991 4-17-56	State of New Mexico 12 ¹ / ₂ % (All)	Gulf Oil Corporation	None	Gulf Oil Corporation All
26	T-30N, R-16W Sec. 16: Lots 3, 4	39.08	OG-456 12-18-56	State of New Mexico 12 ¹ / ₂ % (All)	Northwest Production Corporation	None	Northwest Production Corporation..... 42 ¹ / ₂ % Pubco Petroleum Corporation..... 42 ¹ / ₂ % W. P. Carr..... 15%

TRACT NO.	DESCRIPTION	NO. OF ACRES	EXPIRATION DATE OF LEASE	LAND OWNERS AND PERCENTAGE OF ROYALTY	RECORD OWNER OF LEASE OR APPLICATION	NAME OF OWNER AND PERCENTAGE OF OVERRIDING ROYALTY	WORKING INTEREST OWNER AND PERCENTAGE
27	<u>T-30N, R-16W</u> <u>Sec. 36: E/2 SE/4</u>	80.00	7-26-60	Robert Harper and wife, Anna Harper as joint tenants..12½% (All)	Pan American Petroleum Corporation	Sidwell & Lyons, Inc. 5%	Pan American All
28	<u>T-30N, R-16W</u> <u>Sec. 36: W/2 SE/4</u>	80.00	7-27-60	J. Oliver Stock and Winnie A. Stock, his wife..1/2 of 12½%	Pan American Petroleum Corporation	Sidwell & Lyons, Inc. }	Pan American }
						5%	
	<u>T-30N, R-16W</u> <u>Sec. 36: W/2 SE/4</u>	80.00	1-2-61	David Miller.....1/2 of 12½%	Pan American Petroleum Corporation	Sidwell & Lyons, Inc. }	Pan American }
29	<u>T-30N, R-16W</u> <u>Sec. 36: SW/4</u>	160.00	8-3-61	Eugene E. Pierce and Icie Pierce, his wife }	The Sidwell Corporation	None	The Sidwell Corporation }
				Paula Maxwell and Louis O. Maxwell, her husband }			
				12½% }			
	<u>T-30N, R-16W</u> <u>Sec. 36: SW/4</u>	160.00	8-3-61	Paula Maxwell and Louis O. Maxwell }	The Sidwell Corporation	None	The Sidwell Corporation }
				Adelbert Miller and Mattie Pierce }			
				Miller, his wife }			
	<u>T-30N, R-16W</u> <u>Sec. 36: SW/4</u>	160.00	8-6-61	Adelbert Miller and Mattie Pierce }	The Sidwell Corporation	None	The Sidwell Corporation }
30	<u>T-30N, R-16W</u> <u>Sec. 35: SE/4 SE/4</u>	40.00	5-24-59	Raymond L. Harper and wife, Anabelle Harper, as joint tenants.....1/2 of 12½% D. J. Watson, Widower1/2 of 12½%	Pan American Petroleum Corporation	None	Pan American All

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34	<u>T-30N, R-16W</u> Sec. 21: Lots 1 through 543.18 16, inclusive						Oil and Gas Leasing Rights unknown until determined by the Department of the Interior.

R E C A P I T U L A T I O N

<u>Land</u>	<u>Acres in Unit</u>	<u>Percentage of Unit Area</u>
Federal	8,869.60	83.90
State	599.08	5.66
Patented	560.00	5.30
Undetermined	<u>543.18</u>	<u>5.14</u>
Total Unit Area	10,571.86	100.00

PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 480, Farmington, New Mexico
 MAIN OFFICE 000
 June 29, 1960

1960 JUL 1 AM 2:11 PM E-410-416

Subject: Redesignation of Gallup
 Participating Well Names
 And Numbers
 Northeast Hogback Unit

Director
 United States Geological Survey
 c/o Oil and Gas Supervisor
 P. O. Box 6721
 Roswell, New Mexico

Commissioner of Public Lands
 The State of New Mexico
 Capitol Annex Building
 Santa Fe, New Mexico

✓ Oil Conservation Commission of
 The State of New Mexico
 Capitol Annex Building
 Santa Fe, New Mexico

All Working Interest Owners
 in Unit Area
 (See Attached Addressee List)

Gentlemen:

Effective July 1, 1960, Pan American Petroleum Corporation as Unit Operator of the Northeast Hogback Unit will redesignate all wells located within the Initial Gallup Participating Area for identification purposes.

The attached list indicates the old and new names, well numbers and location of each for your information.

Very truly yours,

PAN AMERICAN PETROLEUM CORPORATION

L. O. Speer, Jr.
 L. O. Speer, Jr.
 Area Superintendent

CKD:en

Attach.

Redesignation of Well Names
Northeast Hogback Unit
San Juan County, New Mexico

<u>Old Designation</u>	<u>New Designation</u>	<u>Location</u>
O. J. Hoover "E" No. 1	Northeast Hogback Unit No. 5	NE/4 NW/4 Section 15, T30N, R16W
O. J. Hoover "E" No. 2	Northeast Hogback Unit No. 6	NW/4 NE/4 Section 15, T30N, R16W
J. W. Aidlin "B" No. 1	Northeast Hogback Unit No. 7	NW/4 NW/4 Section 14, T30N, R16W
J. W. Aidlin "B" No. 2	Northeast Hogback Unit No. 8	NE/4 NW/4 Section 14, T30N, R16W
J. J. Lommori "A" No. 1	Northeast Hogback Unit No. 9	NE/4 NE/4 Section 14, T30N, R16W
J. W. Aidlin "B" No. 4	Northeast Hogback Unit No. 10	SW/4 NW/4 Section 14, T30N, R16W
J. W. Aidlin "B" No. 3	Northeast Hogback Unit No. 11	SE/4 NW/4 Section 14, T30N, R16W
J. J. Lommori "A" No. 2	Northeast Hogback Unit No. 12	SE/4 NE/4 Section 14, T30N, R16W
J. J. Lommori "A" No. 4	Northeast Hogback Unit No. 13	SW/4 NW/4 Section 13, T30N, R16W
J. W. Aidlin "C" No. 1	Northeast Hogback Unit No. 14	NE/4 SE/4 Section 14, T30N, R16W
J. J. Lommori "A" No. 3	Northeast Hogback Unit No. 15	NW/4 SW/4 Section 13, T30N, R16W
J. J. Lommori "A" No. 5	Northeast Hogback Unit No. 16	NE/4 SW/4 Section 13, T30N, R16W
L. W. Swarts No. 1	Northeast Hogback Unit No. 17	SW/4 SW/4 Section 13, T30N, R16W
L. W. Swarts No. 2	Northeast Hogback Unit No. 18	SE/4 SW/4 Section 13, T30N, R16W
J. J. Lommori "B" No. 1	Northeast Hogback Unit No. 19	SW/4 SE/4 Section 13, T30N, R16W
O. J. Hoover "D" No. 1	Northeast Hogback Unit No. 20	NW/4 NE/4 Section 24, T30N, R16W

MAILING LIST OF WORKING INTEREST OWNERS
NORTHEAST HOGBACK UNIT
SAN JUAN COUNTY, NEW MEXICO

El Paso Natural Gas Company (2)
P. O. Box 1492
El Paso, Texas

El Paso Natural Gas Company
P. O. Box 990
Farmington, New Mexico
Att: Mr. Harry Gevertz

Pubco Petroleum Corporation
P. O. Box 1419
Albuquerque, New Mexico

Brookhaven Oil Company
P. O. Box 1267
Scottsdale, Arizona

Gulf Oil Corporation (2)
P. O. Box 2097
Denver, Colorado

Northwest Production Corporation
520 Simms Building
Albuquerque, New Mexico

The Sidwell Corporation
P. O. Box 8443
Denver 10, Colorado

Southern Petroleum Exploration, Inc. (2)
Sistersville, West Virginia

Mr. R. L. Harper
Waterflow, New Mexico

PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 480, Farmington, New Mexico
June 23, 1960

File: E-397-416

Subject: Approval of Initial Participating Area
Gallup Formation
Northeast Hogback Unit
San Juan County, New Mexico

Director
United States Geological Survey
c/o Oil and Gas Supervisor
P. O. Box 6721
Roswell, New Mexico

Commissioner of Public Lands
The State of New Mexico
Capitol Annex Building
Santa Fe, New Mexico

Case #1769

Oil Conservation Commission of
The State of New Mexico ✓
Capitol Annex Building
Santa Fe, New Mexico

All Working Interest Owners
in Unit Area
(See Attached Addressee List)

Gentlemen:

Application for Approval of the Initial Participating Area for the Gallup Formation, Northeast Hogback Unit, dated March 1, 1960, has been executed by the U. S. Geological Survey, Commissioner and Commission on the following dates:

Director United States Geological Survey:	June 14, 1960
Commissioner of Public Lands State of New Mexico:	May 26, 1960
New Mexico Oil Conservation Commission:	May 24, 1960

The Initial Gallup Participating Area becomes effective December 18, 1959.

Very truly yours,

PAN AMERICAN PETROLEUM CORPORATION

L. O. Speer, Jr.
L. O. Speer, Jr.
Area Superintendent

Note: Attached is fully executed copy for your files



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 6721
Roswell, New Mexico

June 20, 1960

RECEIVED	
JUN 23 1960	
FARMINGTON	
✓	1
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Pan American Petroleum Corporation
P. O. Box 487
Farmington, New Mexico

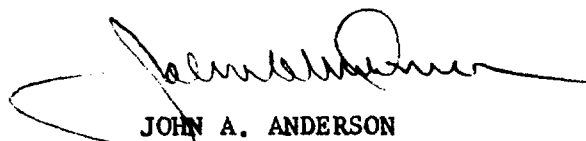
Attention: Mr. L. O. Speer, Jr.

Gentlemen:

Your application of March 1, 1960 for approval of the initial Gallup sand participating area (1,480 acres) for the Northeast Hogback unit agreement (No. 14-08-001-6674), San Juan County, New Mexico, was approved by the Acting Director, U. S. Geological Survey on June 14, 1960.

Two approved copies of the application are enclosed. Please furnish all other interested parties with appropriate evidence of this approval.

Very truly yours,


JOHN A. ANDERSON
Regional Oil and Gas Supervisor

Enclosure

PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 487, Farmington, New Mexico
March 1, 1960

File: E-111-416

Subject: Application for Approval of
Initial Participating Area
Gallup Formation
Northeast Hogback Unit
San Juan County, New Mexico

Director (6)
United States Geological Survey
c/o Oil and Gas Supervisor
P. O. Box 6721
Roswell, New Mexico

Commissioner of Public Lands (3)
The State of New Mexico
Capitol Annex Building
Santa Fe, New Mexico

Oil Conservation Commission of (3)
The State of New Mexico
Capitol Annex Building
Santa Fe, New Mexico

All Working Interest Owners
In Unit Area
(See Attached Addressee List)

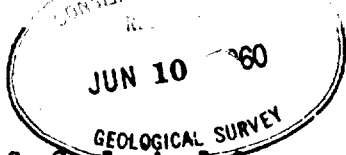
Gentlemen:

Pursuant to Section 11 of the Northeast Hogback Unit Agreement approved December 18, 1959, Pan American Petroleum Corporation, as Unit Operator, has determined, subject to the approval of the Director, Commissioner and Commission, that the Gallup formation is capable of producing unitized substances in paying quantities and that an Initial Participating Area for the Gallup formation should be established. The proposed Initial Participating Area contains 1480 acres and is described as follows

SW/4 NE/4 Section 11
SE/4 Section 11
W/2 SW/4 Section 12
NE/4 NW/4 Section 15
N/2 NE/4 Section 15
SE/4 NE/4 Section 15
N/2 Section 14
N/2 SW/4 Section 14

SE/4 Section 14
W/2 NW/4 Section 13
SW/4 Section 13
W/2 SE/4 Section 13
NE/4 NE/4 Section 23
N/2 NW/4 Section 24
NW/4 NE/4 Section 24

Attached is a schedule reflecting the ownership and describing the acreage in the proposed Initial Participating Area for the Gallup formation. The effective date for the Initial Participating Area is determined as December 18, 1959, the effective date of the Northeast Hogback Unit Agreement.



Director - U.S. Geological Survey
Oil Conservation Commission
Commissioner of Public Lands
All Working Interest Owners

-2-

March 1, 1960

On the map attached as Exhibit "A", the proposed Initial Participating Area for the Gallup formation has been noted. Also attached in support of the Initial Participating Area is a Geological and Engineering Report.

Your approval of the proposed Initial Participating Area for the Gallup formation in the Northeast Hogback Unit is respectfully requested.

Very truly yours

PAN AMERICAN PETROLEUM CORPORATION

L. O. Speer, Jr.
Area Superintendent

GWE:cw
Attach.

Approved
~~Asst. Dir.~~ Director, United States Geological Survey
(Subject to like approval by appropriate State Officials)

Date JUN 14 1960

Approved
Commissioner of Public Lands
(Subject to like approval by U.S.G.S. and Oil Conservation Commission)

Date May 26, 1960

Approved
Oil Conservation Commission
(Subject to like approval by U.S.G.S. and Commissioner of Public Lands)

Date 5/24/60

RECEIVED

JUN 20 1960

U. S. GEOLOGICAL SURVEY
BOSWELL, NEW MEXICO

Unit Operator's Copy

MAILING LIST OF WORKING INTEREST OWNERS
NORTHEAST HOGBACK UNIT
SAN JUAN COUNTY, NEW MEXICO

El Paso Natural Gas Company
P. O. Box 1492
El Paso, Texas

Northwest Production Corporation
520 Simms Building
Albuquerque, New Mexico

Pubco Petroleum Corporation
P. O. Box 1419
Albuquerque, New Mexico

The Sidwell Corporation
P. O. Box 8443
Denver 10, Colorado

Brookhaven Oil Company
P. O. Box 1267
Scottsdale, Arizona

Southern Petroleum Exploration, Inc.
Sistersville, West Virginia

Gulf Oil Corporation
P. O. Box 2097
Denver, Colorado

Mr. R. L. Harper
Waterflow, New Mexico

GEOLOGICAL AND ENGINEERING REPORT
TO SUPPORT INITIAL PARTICIPATING AREA
GALLUP FORMATION, NORTHEAST HOGBACK UNIT
SAN JUAN COUNTY, NEW MEXICO

By December 18, 1959, the effective date of the Northeast Hogback Unit Agreement, Pan American Petroleum Corporation had completed 13 wells in the Gallup formation of the Horseshoe Gallup Field within the boundaries of the Northeast Hogback Unit. In addition, six wells were completed in the Gallup of the Horseshoe Gallup Field by other operators within the unit area on acreage not committed to the Northeast Hogback Unit Agreement. With the exception of El Paso Natural Gas Products Company's Williams No. 1-A, located in the NW/4 NW/4 of Section 12, Township 30 North, Range 16 West, all of the wells so completed as of the effective date of the Northeast Hogback Unit Agreement are considered to be commercial completions in that there is reasonable expectation that each will return the cost of drilling and operation with a reasonable profit. A commercial determination of the Williams No. 1-A has not yet been made.

The Northeast Hogback Unit, lying in Township 30 North, Range 16 West, San Juan County, New Mexico, is in an area where the major geological feature is the structural hogback monocline which forms the northwestern rim of the San Juan Basin. In this area the productive Gallup formation consists of two benches of sand development which form a stratigraphic trap. The southeastern portion of the presently defined limits of the Horseshoe Gallup Field extends into the northeast portion of the Northeast Hogback Unit. Although the productive Gallup sandstone ranges in depth from 800 feet at its northwestern end to more than 4000 feet at the southeastern end, no free water table has yet been encountered, and the productive limits are controlled by

permeability and porosity development. The severe change in depth of the Gallup formation occurs where the Gallup drapes over the structural hogback monocline in the southeastern part of the field.

The attached map, Exhibit "A" of the Northeast Hogback Unit Area shows the area considered reasonably proved productive of unitized substances in paying quantities from the Gallup formation of the Horseshoe Gallup Field within the Northeast Hogback Unit Area. Based on the characteristics of the Gallup formation in this area as well as in other areas of the San Juan Basin, it is concluded that in general a commercial Gallup completion reasonably proves productive the 40-acre tract on which the well is located, together with all direct and diagonally offsetting 40-acre tracts to the commercial well. The Initial Participating Area is based on this conclusion in all cases, except where the well in question was completed for less than top allowable. In these cases, it is believed that the area proved by the well should be reduced in that a deterioration in pay quality is indicated. This was the case in the vicinity of Pan American's Lommori "B" No. 1 and Hoover "D" No. 1, located in the extreme southeast end of the field. Also in the vicinity of Pan American's Lommori "A" No. 6 and El Paso Natural Gas Products Company's Williams No. 2-A there appears to be a less gradual deterioration in porosity development. The Williams No. 2-A was completed as a dry hole and although the Lommori "A" No. 6 had not been completed by December 18, 1959, it was apparent from load oil recovery rates that the well would not be commercial. The well has subsequently been completed as a dry hole. However, based on the attached tabulation of pertinent completion data on all wells completed in the Gallup formation of the Horseshoe Gallup Field, there is no indication of such a deterioration in pay on the southwestern flank of the Initial Participating Area. The acreage

in the Initial Participating Area located in Section 15, Township 30 North, Range 16 West, is reasonably proven productive by the offsetting commercial producers to the north, located just outside the unit area.

Although the El Paso Natural Gas Products Company Williams No. 1-A was completed for 54 barrels of oil per day, subsequent production has shown a decline in producing rate. For this reason, together with the fact that the well is relatively remotely located with respect to other development within the unit area, the well is under observation, and a commercial determination has not as yet been made

WELL DATA
PRODUCING WELLS
NORTHEAST HOGBACK UNIT

1. El Paso Products - Williams No. 1-A
NW/4 NW/4 Section 12, T-30-N, R-16-W
TD 2290 PBD 1950
Perf (Gallup) 1837 - 1875
Sand-Oil Frac: 28,000 gals. x 28,000# sand.
Potential: Pmp 54 BOPD
Complete: 11-10-58
2. El Paso Products - Williams No. 1
SW/4 SE/4 Section 11, T-30-N, R-16-W
TD 2455 PBD 2420
Perf (Gallup) 2382 - 2404
Sand-Oil Frac: 14,000 gals. x 14,000# sand.
Potential: Pmp 103 BOPD
Complete: 9-29-58
3. El Paso Products - Williams No. 2
SE/4 SE/4 Section 11, T-30-N, R-16-W
TD 2650 PBD 2630
Perf (Gallup) 2602 - 2619
Sand-Oil Frac: 27,100 gals. x 30,000# sand.
Perf: (Gallup) 2494 - 2528
Sand-Oil Frac: 27,930 gals. x 30,000# sand.
Potential: Pmp 58 BOPD
Complete: 7-6-59
4. Pan American - J. J. Lommori "A" No. 3
NW/4 SW/4 Section 13, T-30-N, R-16-W
TD 4185 PBD 3958
Perf: (Gallup) 3826 - 3858
Sand-Oil Frac: 27,000 gals. x 45,000# sand.
Perf: (Gallup) 3730 - 3766
Sand-Oil Frac: 30,300 gals. x 30,000# sand.
Potential: Pmp 67 BO 14 hrs.
Complete: 6-19-59
5. Pan American - J. J. Lommori "A" No. 4
SW/4 NW/4 Section 13, T-30-N, R-16-W
TD 3815 PBD 3767
Perf: (Gallup) 3681 - 3703
Sand-Oil Frac: 29,000 gals. x 45,000# sand.
Perf: (Gallup) 3574 - 3614
Sand-Oil Frac: 26,400 gals. x 30,000# sand.
Potential: Pmp 67 BO 9-1/2 hrs.
Complete: 7-5-59

WELL DATA (CONT'D.)

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6. Pan American - J. J. Lommori "A" No. 5
SE/4 SW/4 Section 13, T-30-N, R-16-W
TD 4015 PBD 3968
Perf: (Gallup) 3904 - 3927
Sand-Oil Frac: 37,700 gals. x 45,000# sand.
Perf: (Gallup) 3802 - 3841
Sand-Oil Frac: 29,400 gals. x 30,000# sand.
Potential: Pmp 192 BOPD
Complete: 8-24-59
7. Pan American - J. J. Lommori "A" No. 1
NE/4 NE/4 Section 14, T-30-N, R-16-W
TD 3183 PBD 3143
Perf: (Gallup) 3100 - 3122
Sand-Oil Frac: 29,800 gals. x 45,000# sand.
Perf: (Gallup) 3006 - 3036
Sand-Oil Frac: 28,000 gals. x 30,000# sand.
Potential: Flw 1488 BOPD
Complete: 4-21-59
8. Pan American - J. J. Lommori "A" No. 2
SE/4 NE/4 Section 14, T-30-N, R-16-W
TD 3588 PBD 3550
Perf: (Gallup) 3477 - 3505
Sand-Oil Frac: 25,600 gals. x 36,200# sand.
Perf: (Gallup) 3383 - 3407
Sand-Oil Frac: 29,400 gals. x 29,400# sand.
Potential: Pmp 168 BOPD
Complete: 5-22-59
9. Pan American - J. J. Lommori "B" No. 1
SW/4 SE/4 Section 13, T-30-N, R-16-W
TD 4068 PBD 4027
Perf: (Gallup) 3990 - 4011
Sand-Oil Frac: 30,500 gals. x 45,000# sand.
Perf: (Gallup) 3890 - 3924
Sand-Oil Frac: 25,300 gals. x 30,000# sand.
Potential: Pmp 35 BOPD
Complete: 10-4-59
10. Pan American - L. W. Swarts No. 1
SW/4 SW/4 Section 13, T-30-N, R-16-W
TD 3934 PBD 3890
Perf: (Gallup) 3838 - 3862
Sand-Oil Frac: 33,000 gals. x 45,000# sand.
Perf: (Gallup) 3756 - 3790
Sand-Oil Frac: 28,000 gals. x 30,000# sand.
Potential: Flw 110 BOPD
Complete: 7-27-59

WELL DATA (CONT'D.)

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11. Pan American - L. W. Swarts No. 2
SE/4 SW/4 Section 13, T-30-N, R-16-W
TD 4048 PBD 4013
Perf: (Gallup) 3939 - 3971
Sand-Oil Frac: 30,200 gals. x 45,000# sand.
Perf: (Gallup) 3846 - 3882
Sand-Oil Frac: 29,000 gals. x 30,000# sand.
Potential: Pmp 210 BOPD
Complete: 8-6-59
12. Pan American - O. J. Hoover "D" No. 1
NW/4 NE/4 Section 24, T-30-N, R-16-W
TD 4060 PBD 4018
Perf: (Gallup) 3970 - 3998
Sand-Oil Frac: 29,990 gals. x 45,000# sand.
AbrasiJet (Gallup): 3908
Sand-Oil Frac: 39,400 gals. x 40,000# sand.
Potential: Pmp 27 BOPD
Complete: 11-26-59
13. Pan American - J. W. Aidlin "C" No. 1
NE/4 SE/4 Section 14, T-30-N, R-16-W
TD 3850 PBD 3812
Perf: (Gallup) 3712 - 3744
Sand-Oil Frac: 30,030 gals. x 45,000# sand.
Perf: (Gallup) 3613 - 3653
Sand-Oil Frac: 31,400 gals. x 31,300# sand.
Potential: Pmp 113 BOPD
Complete: 6-5-59
14. Pan American - J. W. Aidlin "B" No. 1
NW/4 NW/4 Section 14, T-30-N, R-16-W
TD 2310 PBD 2274
Perf: (Gallup) 2196-2206; 2232-2242; 2248-2254
Sand-Oil Frac: 18,200 gals. x 20,000# sand.
Perf: (Gallup) 2124 - 2164
Sand-Oil Frac: 40,800 gals. x 40,000# sand.
Potential: Pmp 72 BOPD
Complete: 4-12-59
15. Pan American - J. W. Aidlin "B" No. 2
NE/4 NW/4 Section 14, T-30-N, R-16-W
TD 2573 PBD 2540
Perf: (Gallup) 2488 - 2518
Sand-Oil Frac: 30,200 gals. x 45,000# sand.
Perf: (Gallup) 2400 - 2430
Sand-Oil Frac: 28,800 gals. x 30,000# sand.
Potential: Flw 1488 BOPD
Complete: 5-3-59

WELL DATA (CONT'D.)

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16. Pan American - J. W. Aidlin "B" No. 3
SE/4 NW/4 Section 14, T-30-N, R-16-W
TD 3140 PBD 3090
Perf: (Gallup) 3034 - 3047
Sand-Oil Frac: 30,400 gals. x 45,000# sand.
Perf: (Gallup) 2960 - 2980
Sand-Oil Frac: 27,900 gals. x 30,000# sand.
Potential: Pmp 71 BOPD
Complete: 12-16-59
17. J. R. Abraham - Federal No. 3
NW/4 NE/4 Section 14, T-30-N, R-16-W
TD 2942 PBD 2931
Perf: (Gallup) 2752 - 2884
Sand-Oil Frac: 14,000 gals. x 14,000# sand.
Re-Sand-Oil Frac: 45,000 gals. x 45,000# sand.
Potential: Pmp 205 BOPD
Complete: 7-30-59
18. J. R. Abraham - Federal No. 4
SW/4 NE/4 Section 14, T-30-N, R-16-W
TD 3308 PBD 3270
Perf: 3104 - 3250
Sand-Oil Frac: 60,000 gals. x 56,000# sand.
Potential: Pmp 96 BOPD
Complete: 10-26-59
19. El Paso Products - Williams No. 3
NW/4 SE/4 Section 11, T-30-N, R-16-W
TD 2224
Perf: (Gallup) 2011-48, 2123-39
Sand-Oil Frac: 2011-48 with 34,700 gals. oil
and 70,000 pounds sand.
Sand-Oil Frac: 2123-39 with 25,200 gals. oil
and 50,000 pounds sand.
Potential: Pmp 114 BOPD
Complete: 12-18-59

OWNERSHIP SCHEDULE
INITIAL GALUP PARTICIPATING AREA
NORTHEAST HOGBACK UNIT
SAN JUAN COUNTY, NEW MEXICO
EFFECTIVE DECEMBER 18, 1959

Tract No.	Description of Land	Serial No. & Date of Lease	Basic Royalty		Owner of Record	Overrides & Production Payments %	Working Interest		Acres	Percent Participation
			Owner	% of 8/8			Owner	% of Lease		
6	NW/4 Sec. 14, T-30N, R-16W	NW-04407 7-1-52	USA	12.50	Pan American Pet- roleum Corporation	5.00	Pan American Pet- roleum Corporation	100	160	14.28571
7	N/2 SW/4 and SE/4 Sec. 14, T-30N, R-16W	NW-04407-A 7-1-52	USA	12.50	Pan American Pet- roleum Corporation	4.00	Pan American Pet- roleum Corporation	100	240	21.42856
7	N/2 NW/4 Sec. 24, T-30-N, R-16-W	NW-04407-A 7-1-52	USA	12.50	Pan American Pet- roleum Corporation	4.00	Pan American Pet- roleum Corporation	100	80	7.14286
11	NE/4 NW/4, NW/4 NE/4 Sec. 15, T-30N, R-16W	NW-04443 1-1-52	USA	12.50	Pan American Pet- roleum Corporation	5.00	Pan American Pet- roleum Corporation	100	80	7.14286
13	NE/4 NE/4 Sec. 23, T-30N, R-16W	NW-04443-B 1-1-52	USA	12.50	Pan American Pet- roleum Corporation	5.00	Pan American Pet- roleum Corporation	100	40	3.57143
13	NW/4 NE/4 Sec. 24, T-30N, R-16W	NW-04443-B 1-1-52	USA	12.50	Pan American Pet- roleum Corporation	5.00	Pan American Pet- roleum Corporation	100	40	3.57143
15	W/2 NE/4 Sec. 14, T-30N, R-16W	NW-04444 4-1-52	USA	12.50	J. R. Abraham	3.00	J. R. Abraham	100	80	0.00000
16	S/2 SW/4 Sec. 13, T-30N, R-16W	NW-05859 8-1-51	USA	12.50	Pan American Pet- roleum Corporation	3.00	Pan American Pet- roleum Corporation	100	80	7.14286

OWNERSHIP SCHEDULE (CONT'D.)

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Tract No.	Description of Land	Serial No. & Date of Lease	Basic Royalty		Owner of Record	Overrides & Production Payments %		Working Interest		Acres	Percent Participation
			Owner	% of 8/8		Owner	%	Owner	% of Lease		
17	E/2 NE/4 Sec. 15, T-30N, R-16W	NM-06686 3-1-55	USA	12.50	Pan American Pet- roleum Corporation	5.00		Pan American Pet- roleum Corporation	100	80	7.14286
18	NW/4, SW/4, Sec. 12, T-30N, R-16W	SF-081298 10-1-51	USA	12.50	El Paso Natural Gas Products Co.	4.00		El Paso Natural Gas Products Co. Colorado Oil & Gas Corporation	.50 .50 .50	40	0.00000
19	NW/4 SE/4 Sec. 13, T-30N, R-16W	SF-081298-A 10-1-51	USA	12.50	Pan American Pet- roleum Corporation	5.00		Pan American Pet- roleum Corporation	100	40	3.57143
20	SW/4 NE/4, SE/4 Sec. 11, T-30N, R-16W	SF-081299 10-1-51	USA	12.50	El Paso Natural Gas Products Co.	4.00		El Paso Natural Gas Products Co. Colorado Oil & Gas Corporation	.50 .50 .50	200	0.00000
20	SW/4 SW/4 Sec. 12, T-30N, R-16W	SF-081299 10-1-51	USA	12.50	El Paso Natural Gas Products Co.	4.00		El Paso Natural Gas Products Co. Colorado Oil & Gas Corporation	.50 .50 .50	40	0.00000
21	W/2 NW/4, N/2 SW/4, SW/4 SE/4 Sec. 13, T-30N, R-16W	SF-081299-A 10-1-51	USA	12.50	Pan American Pet- roleum Corporation	5.00		Pan American Pet- roleum Corporation	100	200	17.85714
21	E/2 NE/4 Sec. 14, T-30N, R-16W	SF-081299-A 10-1-51	USA	12.50	Pan American Pet- roleum Corporation	5.00		Pan American Pet- roleum Corporation	100	80	7.14286
100.00000%											
			Type of Acreage	Committed Acres	Uncommitted Acres	Total Acres					
			Federal	1120	360	1480					